

What Is Claimed Is:

1. A device for ascertaining the charge ( $Q_e$ ) able to be drawn from an energy store, in particular a battery, up to a specified cutoff, characterized by
  - a charge predictor (2), which in the case of a specified discharge current characteristic ( $I_{Batt,ent1}$ ) calculates the charge ( $Q_e$ ) able to be drawn from the energy store on the basis of a mathematical energy store model, which mathematically represents the electrical properties of the energy store, and
  - a state variable and parameter estimator (1), which ascertains state variables ( $Z$ ) and/or parameters ( $P$ ) for the mathematical energy store model from current performance quantities ( $U_{Batt}, I_{Batt}, T_{Batt}$ ).
2. The device as recited in Claim 1, wherein the energy store model is a battery model, which includes at least a mathematical model for the internal resistance ( $R_i$ ), an acid diffusion resistance ( $R_k$ ) and a charge transfer polarization ( $U_D$ ).
3. The device as recited in Claim 1 or 2, wherein as state variables ( $Z$ ) the state variable and parameter estimator (1) ascertains at least an open-circuit voltage ( $U_{c0}$ ) and a concentration polarization ( $U_k$ ).
4. The device as recited in Claim 3, wherein the state variable and parameter estimator (1) additionally ascertains a charge transfer polarization ( $U_D$ ).
5. The device as recited in one of the preceding claims wherein the charge predictor (2) ascertains the charge ( $Q_e$ ) able to be drawn until a specified minimum

- electrolyte voltage ( $U_{\text{emin}}$ ) is reached that represents a first cutoff criterion.
6. The device as recited in one of the preceding claims, wherein the charge predictor (2) ascertains the charge ( $Q_e$ ) able to be drawn until a minimum voltage ( $U_{\text{Battmin}}$ ) of the energy store is reached that represents a second cutoff criterion.
  7. The device as recited in one of the preceding claims wherein the charge predictor (2) ascertains the charge ( $Q_e$ ) able to be drawn until a specified minimum capacity ( $U_{\text{Lastmin}}$ ) is reached that represents a third cutoff criterion.
  8. The device as recited in one of the preceding claims wherein a voltage predictor is provided for which a load current characteristic ( $I_{\text{Last}}$ ) is specifiable and which as a function of the load current ( $I_{\text{Last}}$ ) ascertains a corresponding load voltage ( $U_{\text{Last}}$ ), which would set in on the basis of the specified load current characteristic ( $I_{\text{Last}}$ ).
  9. A method for ascertaining the charge ( $Q_e$ ) able to be drawn from an energy store, in particular a battery, up to a specified cutoff, characterized by the following steps:
    - calculating the charge ( $Q_e$ ) able to be drawn, in the case of a specified discharge current characteristic ( $I_{\text{Batt,Entlade}}$ ), from the energy store with the aid of a charge predictor (2) on the basis of a mathematical energy store model, which mathematically represents the electrical properties of the energy store, and
    - ascertaining state variables (Z) and/or parameters (P) for the mathematical energy store model from

current performance quantities ( $U_{\text{Batt}}, I_{\text{Batt}}, T_{\text{Batt}}$ ) of the energy store with the aid of a state variable and parameter estimator (1).

10. The method as recited in Claim 9, wherein the charge predictor (2) calculates a charge ( $Q_e$ ) able to be drawn until reaching a specified minimum capacity ( $U_{\text{Lastmin}}$ ), a load voltage ( $U_{\text{Last}}$ ) being taken into account, which is supplied to the charge predictor (2) by a voltage predictor (1) which ascertains the load voltage ( $U_{\text{Last}}$ ) as a function of a specified load current characteristic ( $I_{\text{Last}}$ ).